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ARCHÆOLOGY OF THE CHAMPLAIN VALLEY.

BY PROF. GEO. H. PERKINS.

THE region which surrounds Lake Champlain presents a very great variety in its surface features. As the tourist sails through the lake he may see, here lowlands, there mountains; on the one hand rocky hillsides, on the other meadows or marshes; here boundless forests, there wide and sparsely timbered plains, the whole intersected by numerous large streams and in the midst the lake itself, its northern portion filled with large islands, while south of these is open water. Such a territory must, if we can judge, have offered very great attractions to those savage tribes of red men who, in the early days before the white men began to encroach upon the lands they called their own, roamed through the forests or glided in their canoes over the water, for here they would find hunting grounds occupied by a great variety of game, surrounding fishing grounds of equal richness, fertile fields for the cultivation of the few vegetables which they used, and many a wild retreat in which they could conceal themselves from any powerful foe who should attack and defeat them. In such a region we should expect to discover many a site of an ancient village and great numbers of those stone implements which indicate the former presence of those who made and used them.

We do not, however, find these expectations fully realized, for remains of ancient settlements are very rare, and no sure evidence exists of any long continued occupation of any locality in the immediate vicinity of the lake, and if a considerable population, with fixed settlements, ever lived there, it was long before the advent of the early explorers. In the writings of Champlain and others, we find intimations, in the quoted statements of the sav-

ages, that at one time the shores, especially the eastern, and the large islands of the lake to which he gave his name, were inhabited, but the savage allies of Champlain, who early in the summer of 1609 sailed through it, told him that because of hostilities between the tribes they were not then peopled, and this explorer did not, apparently, see any of the Iroquois who held the region until he reached a place which must, judging from his brief description, have been near what is now Crown Point. At this place, in May 1609, he joined his Algonquin allies in a battle with the Iroquois, and thus inaugurated the long series of conflicts which have made the place historic. Probably, further investigation will disclose some new facts, but at present we know of only two localities very near the lake shore where there are any sure evidences of continued occupation. One of these is on the shore, or very near it, at Plattsburgh, N. Y., the other is further from the lake, on the banks of the Missisquoi, one of the rivers emptying into the lake, near Swanton. Here and there on the large islands, and near the shore, large quantities of flint chips, or an unusual abundance of specimens, arouse a suspicion that there was located at one time a village, but the proof is wanting in all cases, though the probability may be strong. As we should expect from what we know of the condition of the tribes when first visited by white men, we find relics—and of many kinds, and in all a considerable quantity—not often in large numbers in a limited area, but scattered here and there over the country. Near the mouths of some of the larger streams, and along their banks, more are found than elsewhere, and there are some favored localities where diligent collectors have been rewarded with more than ordinary success, but after all, at least so far as Vermont is concerned, the above statement holds true. One of the most interesting localities, and one that probably affords us some of the most ancient specimens, is that already mentioned near Swanton. As a full account of this locality has been published in the Portland Volume of Proceedings of the American Association for the Advancement of Science, where some of the specimens are figured, I need only give here a brief statement of the leading facts respecting it. When Swanton was settled by white men a village of St. Francis Indians was located near the place, and many stone implements used by them have since been found. Probably most of the objects of this sort found on or near the surface should be referred

to this people. But another and more ancient people had also had a settlement near the same place, whose only relics, so far as we know, are such as they buried with their dead. On a sandy ridge near the Missisquoi, about fifteen years ago, an extensive pine forest was partially cut away. The trees, some of which had been growing perhaps for centuries, had hitherto protected the mobile soil from the prevailing winds, but after the clearing the sand was blown away until stone objects and fragments of bone were disclosed. My friend, Mr. H. H. Dean, of Swanton, together with others, thereupon examined the locality and discovered that where the old pine forest had stood, some unknown race had buried their dead, placing in their graves such objects as custom or affection indicated.

Between twenty and thirty graves in all have been discovered. A variety of objects have been taken from them, some of which were found directly beneath the stumps of large trees. These objects differ materially from those which belonged to the Algonquins, being of finer material and more excellent workmanship, and most of them closely resemble similar specimens from the mounds of the Mississippi valley, many being identical. In all cases except two the sand about the bodies was colored a dark red, probably by some mixture of red hematite and water, and some of the stone implements are stained with this same substance. The skeletons in the graves were mostly decomposed, so that only few and fragmentary bones have been preserved. A few objects made of native copper beaten into shape were found, such as chisels, small bars, and beads made of sheet copper rolled into tubes. Shell beads almost precisely like some of those figured by Mr. C. C. Jones in "*Antiquities of Southern Indians*," have been found in considerable number. Of stone implements and ornaments a much greater number were found; of these, perhaps the most interesting are stone tubes, of which about a dozen have been obtained. These are all of similar form, being cylindrical, the perforation, at one end about half an inch in diameter, enlarges to nearly an inch in diameter at the other end. They are of smooth, hard stone, of a drab color in some specimens, brown in others. They are very nicely formed and finished, the surface being smooth and almost polished. The small end of the bore was stopped somewhat imperfectly by a stone plug ground into shape. The length of the tubes varies

from seven inches to thirteen inches. Similar tubes have been found on one of the islands in Lake Champlain and near Burlington, and Mr. S. L. Frey, of Palatine Bridge, N. Y., has described¹ very similar ones from graves at that locality. And in most respects the graves which Mr. Frey has discovered resemble those found in Swanton to a very remarkable degree. Several gorgets, or two-hole stones, some of them made with great skill, have been found in the graves, and other objects which may properly be classed with them, viz: boat-shaped stones and two carved bird-like heads. All of these are made from ornamental stone, and are carefully finished and perforated, at each end of the base in the heads, and each side of the middle in the boat-stones. It is worthy of note how large a proportion of the objects which were buried in these graves are ornamental in their character, or at least of a higher grade than the ordinary axes, spear, arrowpoints and the like. Although specimens of these have been found, they do not occur in large quantities, and they do not, as is usually the case, make up the greater part of the collection.

In North-eastern Vermont there were settlements, formerly of the Coosuck Indians, a branch of the Abenaki, and near what is now called Wells river, remains of a village and fort were visible not many years ago. So far as my observation extends, that portion of Vermont west of the Green mountains was more thickly settled, or perhaps it would be more correct to say more frequently visited than the eastern portion. As all the specimens are obtained in such a manner as to preclude the possibility of fixing even their relative age, this cannot be definitely determined, but I am clearly of the opinion that, while probably a large part of the objects found are to be considered as having been made and used by the Iroquois or Algonquin tribes, there are others of a more elaborate pattern, showing greater skill and taste, which are to be referred to a more ancient and unknown people. I wish to give a general account, necessarily brief and imperfect, of the several kinds of objects found in that part of Vermont and New York which may be properly included in the Champlain valley. Copper articles are rare and all are of, presumably, Lake Superior native copper beaten into the required form. More copper specimens have been found in

¹ AMERICAN NATURALIST, Vol. XIII, p. 637.

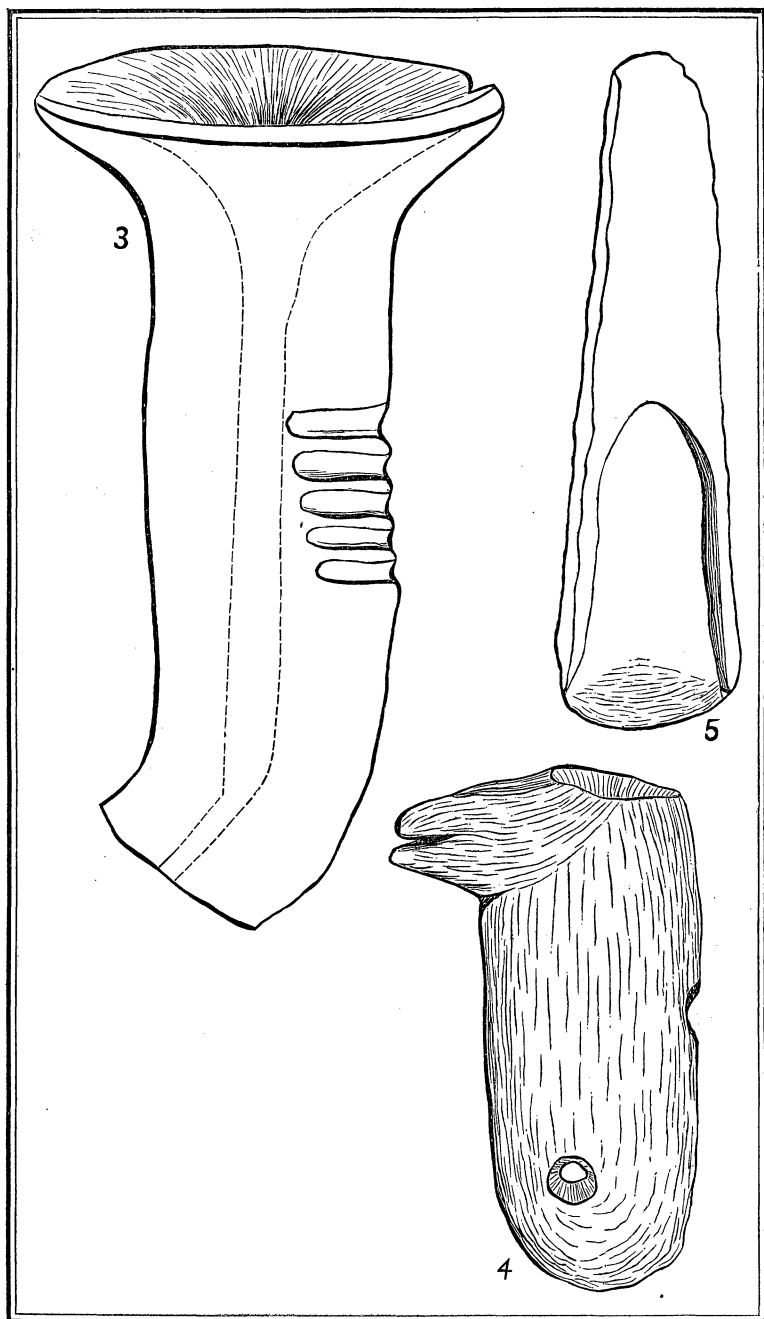


PLATE I. Perkins on the Archæology of Vermont.

the Swanton graves, as incidentally noticed above, than in any other locality, but other articles, one here and another there, have been found in various places. A very fine copper gouge was found near Milton and is in the collection of Mr. P. C. Deming of that place, who has a very fine local collection. This is shown one-half full size in Fig. 5. Spearpoints, occasionally with notched stems or with the sides of the stem turned over to form a socket, also occur sparingly. These, together with the articles already mentioned in connection with the Swanton graves, complete the list of copper articles. No objects made from shell except the shell beads from Swanton have been found.

Specimens of earthenware occur all over the State, chiefly in the form of fragments. The only entire specimens of jars now in existence, are two in the college collection at Burlington. Several others have been found but have been destroyed. Both of the entire jars are figured in Vol v, pp. 14, 15, of the *NATURALIST*, though Fig. 2 is not entirely correct in its representation of the rim. As I have given a detailed account of some of the more prominent kinds of Vermont pottery elsewhere,¹ it must suffice to give here only general statements. All of the earthenware was ornamented somewhat, some but little, some more, the decoration consisting of impressed figures of a great variety of form, as squares, circles, triangles, crescents, key-shaped figures, etc., with lines of greater or less width running either horizontally, obliquely or vertically. These are combined to form a great diversity of patterns. Some of them, as may be seen by a reference to the figures mentioned above, are very elaborate. No decoration by the application of paint or any coloring material occurs. In most cases the ornamentation is confined to a narrow band around the rim, and I believe in all cases the lower portion, which was globular, was smooth. The mouth of the jars was usually circular, but sometimes rectangular, becoming circular at the contracted portion, or neck. In no case was there any attempt at imitation of animal forms. The material of which the jars was made is essentially like that found elsewhere. In some cases it appears to have been gravel mixed with clay, as the fragments of quartz and feldspar are rounded, in other cases the fragments are angular, and were obtained by pounding; fine sand seems to have been used in some cases. In color there is as great

¹ Proc. A. A. A. S., Vol. xxv.

a variety as in texture, some pieces being light stone color, others black and others of intermediate shades. The smallest jars are only known by fragments. From these, so far as we are able to reconstruct the jars, we judge that they held about a pint. The largest jar is one mentioned in Thompson's "Vermont." This was found in Middlebury, and held twenty quarts, but I can not discover what has become of it. The two jars in the museum at Burlington hold, respectively, nine and twenty-four pints. A few fragments of pipes have been found made of terra-cotta. Mr. Deming has, in his collection, a perfect specimen of very fine material of the form which resembles a trumpet, much like some figured by Schoolcraft.¹ The Milton pipe, Fig. 3, is of very fine form, of a reddish-brown color, smooth and polished on the surface. It is about four and a-half inches long, nearly straight except at the smaller end, which is abruptly bent down, and at this point the bore is but an eighth of an inch in diameter, though it is twice as large throughout most of the length, and at the large end, which is two inches in diameter, it expands to nearly the same size. Across the middle portion of this pipe are five transverse grooves, which extend about half way around the body. Dr. Kellogg of Plattsburgh has a fragment of what appears to have been a very similar pipe from the New York shore of the lake, and some of those figured by Schoolcraft were found in that State. In the abstract of a paper read at the St. Louis meeting of the A. A. A. S., and published in Vol. 27 of the "Proceedings," I stated that no agricultural implements had been found in Vermont. Very soon after making this statement I found undoubted implements of that character, and while they are by no means abundant, they are certainly not absent, for I have seen quite a number, nearly all of them spades, although one or two may have been used as hoes. None of the specimens exhibit the regular oval form of western specimens, but all are more or less narrowed at one end, and are generally lanceolate or leaf-shaped. Nor do they equal the best western specimens in regularity of outline and elegance of finish. They are all of flint or hornstone, flaked, and are usually strong though all are not clumsy. The largest are about ten inches long and four inches wide, while the smallest may not be half so large. It is not unlikely that agricultural operations may have been carried on by the aid of other implements than those usually assigned to

¹ History, &c., of Indian Tribes, Part 1, pls. 8 and 10.

that use, and many specimens of celts, ungrooved axes and the like may have served a good purpose as spades or hoes. Some of the specimens found in Vermont, which from their form would be classed as celts, are of soft material and of a character such as to render it very probable that they were used for digging rather than cutting. If this be so, agricultural implements may be more abundant than has been supposed. All the ordinary varieties of axes and hatchets have been found about Lake Champlain, by far the most abundant being celts, or ungrooved axes, and because of their great diversity in size and form, I am led to believe that these implements may have served many different purposes. Indeed it would not seem very improbable that the same implement may have served at one time as a tomahawk, at another as an axe or chisel; or, with a different handle, even as a spade or hoe. Forming a sort of connecting link between the celt and the grooved axe is the notched axe. Most of the specimens of this class are small, but a few quite large ones have been found; most of them are rather rude and of coarse material. Grooved axes are not common, though some few very fine specimens have been found, but I have seen none that would compare favorably with the finest Western specimens either in size or elegance of form. The largest which I have seen is nine inches long and four and a-half inches wide, but most of the grooved axes are much smaller. Such specimens of axes as have been collected have been obtained, one here and one there, singly, nowhere in such groups as some collectors describe. I presume that all the grooved axes ever found in the Champlain valley, unless many were destroyed before collectors began to save them, would not amount to so large a number as Dr. Abbott mentions from a single small excavation made in digging a cellar in Trenton, N. J. Hatchets, chiefly of flint, are found, some of them with very sharp edges and regular form. One very unique specimen of axe, if such it is, should be mentioned here. It is in the possession of Mr. W. W. Culver, of White River Junction, and was found near that place; its form is that of a letter L, somewhat like one figured by Evans¹ which was found in England, but the Vermont specimen is much larger. It is shown about one-fourth natural size in Fig. 6. The longer arm is seven and a-half inches and the shorter four and three-quarters inches long, and both are

¹ Rude Stone Implements, p. 124, figure 82.

about two and a-half inches wide ; it is made from basaltic rock ; one surface is flat, the other convex. The edges are rounded, well made and sharp.

Specimens of "pestles" are often found, though whether all of them were used as implements for pounding grain seems more than doubtful. In our collection we have three which I should hesitate to call pestles. One of these, especially, seems unfitted for such use, but rather seems to have been made for a baton of office, or a club. It is shown about one-half natural size in Fig. 1 and is twenty-seven inches long, quite slender, and uniformly cylindrical, its average diameter being about two inches. Its weight is six pounds. The diameter is nearly equal throughout ; one end is somewhat contracted, and the opposite more so to form a neck for the carved head which terminates it. This carving, though not elaborate, yet distinctly and strongly indicates a head, somewhat dog-like and somewhat fish-like, in some features resembling one animal, in others the other. There are no ears, but the eyes are large and prominent. The muzzle is much elongated, the whole length being over three inches. The mouth is represented by a deep groove extending back on each side as far as the eyes. From the lower lip a raised ridge runs back and over the top of the head, which resembles somewhat the gill-cover of a fish. The material is a gray schist well finished, and where the surface is not weathered it is smooth. This specimen was found near the lake shore not far from St. Albans. Another very similar specimen, but without the carving, has recently been found on the New York shore. Another specimen of this sort, with a somewhat similar carving, though shorter and thicker, is made of hard red sandrock, such as occurs abundantly in this region. This specimen, though of about the same diameter as the preceding, is only half as long, and the diameter is not so uniform, but increases from the carved end to the opposite, which is rounded unevenly. A third and still different specimen was found near Highgate, Vt. This is a little less than twenty inches long and made of fine-grained gneiss. It is not cylindrical, but oval in cross section, the surface being well smoothed, and it appears to have been at first rectangular in cross section and made oval by rounding the corners. The surface was first picked and then ground so that most of the marks of the pick are removed. The carved end represents, rather rudely but yet

plainly, the head of a squirrel or some similar animal. All of the above carvings are somewhat oblique with reference to the main shaft of the specimens. I have heard of a similar "pestle" with carved end in the State collection at Albany, but I have not seen it. May it not be that these articles were either clubs or for some similar use, the carving indicating the totem of the owner?

Of the more common forms of "pestles," we have found in Vermont, I believe, all varieties. Some are fusiform, used, evidently, as rollers, since both ends are in some cases polished by the friction with the hands, others as obviously used for pounding, as the more or less rectangular form precludes the possibility of rolling them; one of these is three inches square and nearly a foot and a-half long, flat on all sides; other specimens are flat on two sides and rounded on the other two; others are club-shaped, and so on.

Pipes are rarely found; in all I know of no more than six perfect specimens, though others may be in existence, and probably others have been found and destroyed. All of those which I have seen are well made, and polished, and while, as compared with the elaborately carved specimens from the mounds, our Vermont specimens appear very plain, yet they are not of inferior workmanship though simpler in form. Only one specimen exhibits any attempt at imitation of animal form, and this not to a very high degree. It is prolonged on one side of the rim to form what appears to be the beak of a bird. The form of this pipe, Fig. 4, is cylindrical, with an aperture for the stem about half way between the rim of the bowl and the base, and transversely to this there is another hole through the base as if for suspension when not in use. It is over two and a-half inches long, and rather more than one inch in its longest diameter, the cross section being oval. It is made of a compact, gray, mottled limestone, well polished over the outside and on the inside of the bowl.

Another pipe of somewhat different form, made of black limestone, was found on an island in the lake. This is well polished, the upper part cylindrical, or rather urn-shaped; below this there is a narrow rectangular space, and below this it is contracted and wedge-shaped. The lower end is deeply notched. It is larger than the preceding, being three and a-half inches long. The bowl is very well made and, as in the former specimen, the stem enters at the side near the middle. Another pipe of dark clouded gypsum, highly polished, is in general form like that of a modern clay pipe. This is described in Vol. v, page 13, of the NATURALIST. Others I will not take space to describe.

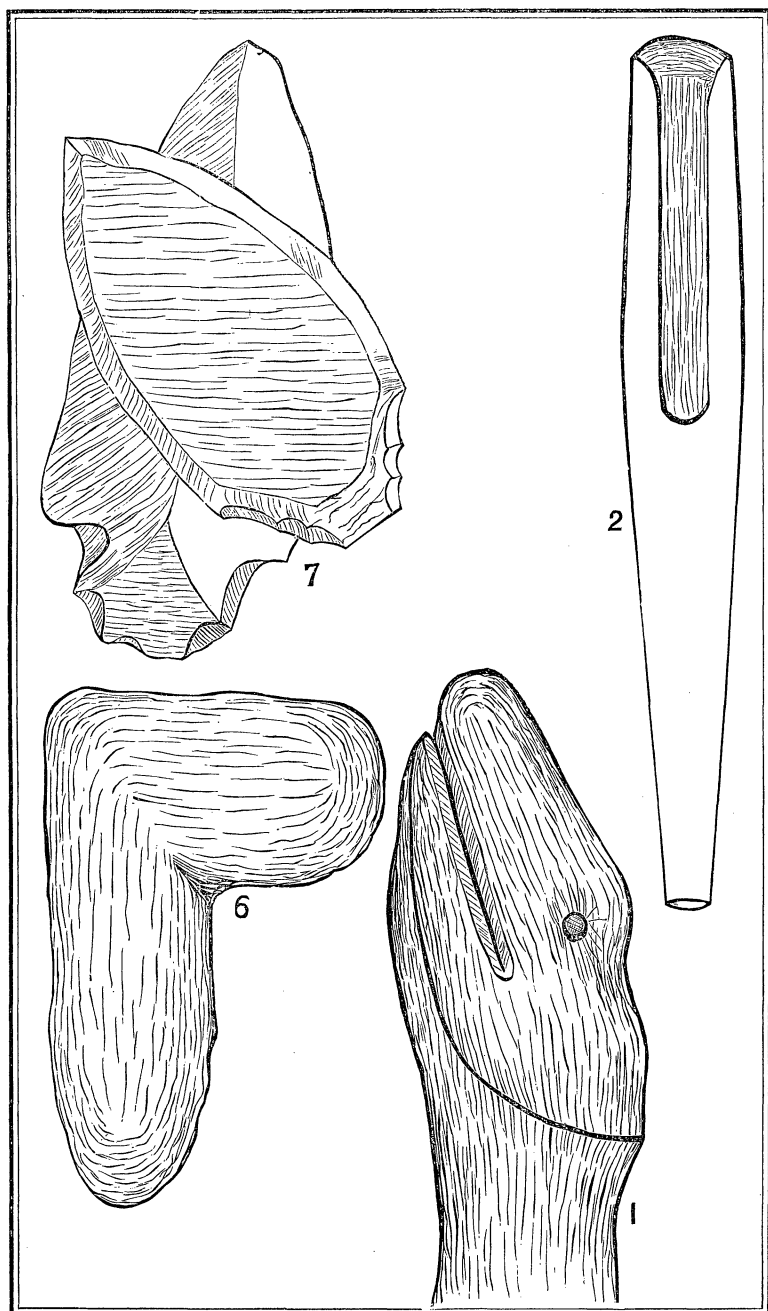


PLATE II. Perkins on the Archæology of Vermont.

Gorgetts, with one hole or two, are found all over the region we are considering. As is the case elsewhere, these are usually made of some compact, fine-grained stone that is capable of taking a smooth polish. Slate is the most common material in those that I have seen, sometimes red roofing slate, often a dark-greenish talcose slate veined with black. The gorgets with one hole are less common and less elegantly made than those with two, and the material seems less carefully selected. Of the two-hole stones, those of rectangular outline are most abundant, not that all these are rectangular, but with some modification of this form, as with corners cut off making an octagonal figure, or rounded more or less. In these, as in the banner stones, we find, in Vermont, many specimens closely resembling those found in the Mississippi valley. A greater range was possible in the choice of material of which to make "banner stones" for, as they are often thick, a material which would readily cleave into thin flat pieces was not essential, as it was in case of the manufacture of gorgets. Accordingly we find the banner stones made not only of slate, like that of which the gorgets were most often made, but also of limestone, greenstone, syenite, &c. With one exception, and perhaps that was for a different purpose, all the banner stones are perforated, sometimes by a hole of considerable size, and the regularity which we find in the perforation of very hard stones is often very remarkable, as is also the finish of the entire specimen.

The "boat stones" alluded to in speaking of the Swanton graves are also found in other places, though nowhere common. Some of these are deeply excavated on the upper or flat side, others but very slightly or not at all. In the selection of material for the manufacture of the different classes of what are considered ornamental articles, some principle was adopted which we cannot understand, for while stone that was attractive in color was used, much that could easily have been obtained and that would have made, so far as our judgment goes, much more beautiful objects, was neglected. For example, in many places on the shore of Lake Champlain, a fine black slate conspicuously veined and clouded with pure white satin spar abounds, and everyone is familiar with the fact that a great variety of marble is abundant in Vermont, and much of this crops out on the surface and could have been easily obtained, but when we search in collections of archæological objects for specimens made of these materials, we

search almost in vain. With the exception of one of the carved heads mentioned above, which is of white marble, I know of no specimen made from any of the kinds of stones mentioned. As a general rule, I think that the stone implements found in the Champlain valley are made of less beautiful material than those from the Mississippi valley, so that if we could see collections of similar objects from each locality side by side, there would be a noticeable difference in brightness and variety of color. This is especially true when we consider only those objects made of the different varieties of siliceous stone. It is not altogether owing, it may be, to any lack of taste in the selection of material for making arrow and spearheads, but to the fact that the kinds of stone conveniently accessible to the New England tribes, which were suitable for flaking, were fewer and less beautiful than those found in the West. Occasionally jasper or agate, or some attractive bit of stone was brought from Lake Superior or the Mississippi, and specimens made from such imported material are at once conspicuous in a collection on account of their greater beauty, but ordinarily the less brightly-colored materials, the gray quartzites, dull brown or black hornstones, and bluish or milky quartz, such as could be taken from ledges near at hand, furnished the staple for flaked articles, while pebbles from the drift somewhat increased the variety. Fine grained flint, prettily veined jaspers and agates are not wanting, but quartzites were largely used, and our collections lack much of the beauty which we see in those from other localities. Nevertheless some of the milk-white quartz specimens are very pretty, and one of the most commonly used materials, a translucent, bluish quartz, is, in fine specimens, by no means destitute of beauty.

So called "gouges," though not among our most abundant specimens, are yet relatively quite common, and of an almost endless variety of form. That all of these grooved implements were used as gouges is very doubtful. Of some of the specimens I have found it impossible to do more than conjecture the use. None of the objects found are more carefully formed or finely finished than some of these "gouges," and most of them are far more carefully made than the "chisels" or celts. Some of the larger specimens are a foot in length, of basalt or other hard stone, but yet are made with a degree of skill, as exhibited in the symmetry of form and smoothness of surface, that excites

great admiration. In some the groove is wide and deep, and reaches from end to end, each end, in some cases, being ground to an edge, in others it is short. Some are flat on both sides, others on one, others convex on both. Some have one end finished like a gouge and the opposite like a chisel, and in these the gouge end is flatter than usual and the excavated portion but little concave. Some are of such soft material, as steatite, that it is difficult to see how they could have been of much service as implements, but most are of hard stone. Several long "gouges" have been found which are somewhat peculiar in form. All of these are very finely made; in cross section they are shaped like a narrow Gothic arch, the point coming opposite the groove, or, in such as have only a short groove, the portion above this may be nearly cylindrical. Fig. 2 shows a very fine specimen of this sort which is over a foot in length. It is made of a rather hard greenish stone and is elegantly formed and polished. It is in the collection of Hon. A. B. Holbert of Essex, Vt. One of the largest of these specimens is in the collection of Dr. Kellogg, of Plattsburgh, and is eighteen inches long, with the end opposite the edge broken off, so that its entire length was probably considerably more. The groove extends through the entire length, and presents the unusual feature of being larger above the edge than just at it; the material is basalt. Another specimen, found not far from Burlington, less elegantly made and more clumsy but yet a very fine specimen, is nineteen inches long.

The different classes of chipped or flaked articles, as scrapers, rimers, knives, hatchets, spear, lance and arrow points, are found in greater or less abundance on the shores of Lake Champlain. Scrapers, similar to those found elsewhere, occur, though rather sparingly. The smaller ones are oblong, oval or nearly circular, while the larger are more triangular or lanceolate. Some of the discoid scrapers are very small, but the abruptly beveled edge is carefully chipped, and their use can scarcely be doubted, although similar disks of flint or quartz, half or three-quarters of an inch in diameter, are found, which have no such edge. Sometimes chance flakes, chipped off in making some other and larger object, have been by a little labor converted into scrapers. Some large specimens occur which have a less decided scraper edge, and may have been skin dressers.

Of knives we find many interesting specimens, exhibiting, I think, more than the usual variety of form. All that have been found on the eastern shore of the lake are chipped or flaked, but, as will be seen hereafter, ground knives have been found on the western shore. In the examination of our specimens I have often found it difficult, and sometimes impossible, to decide whether a given specimen was to be considered a knife or a lance, or a spearhead, for the "knives" pass, by indistinguishable gradations, into several other classes of implements. Moreover, I cannot doubt that often the same implement was used at one time without a handle as a knife or skin dresser, and at another fastened to a shaft as a spear or lance. Some of our Vermont knives are quite rude, others are more elegantly formed and finished, but none of them present so finished an appearance as some of the ground knives from other localities. The common oval knife with a sharp edge all around it is often found, and of various sizes, some being less than an inch in diameter, others several inches; other knives are ovate, triangular, lanceolate, linear, and many more or less irregular modifications of these forms. All of these are without stems, and most of them undoubtedly knives, used for no other purpose than cutting. Some are edged on all sides, others on only one; some are several inches long and not more than one wide, making dirk-shaped implements.

It is interesting to notice that on both shores of Lake Champlain we find the same quadrangular forms, broken across one end, as those figured by Dr. Abbott in his "Stone Age in New Jersey,"¹ and from the appearance of our specimens I am inclined to agree with him in believing that the break was not accidental, or rather, I should think it more probable that the broken end is simply the original surface of the block of flint or quartz from which the knife was flaked, and while all the other sides were chipped, this was left, perhaps for insertion in some sort of a handle of wood or bone. Stemmed or hafted knives of many forms occur abundantly all over this region, some of them shaped much like a modern knife, others more like lance or spear points, and I do not think that any definite line can be drawn between these classes of implements. In Vol. v of this magazine, p. 16, Fig. 5, a very peculiar form of what I then called a spear point, is shown about half natural size. At the time the article was written, this specimen was the only one I had ever seen, but since then several

¹ Smithsonian Report, 1875, p. 301, figs. 111, 112.

others have been found of similar character. If these specimens are to be considered as implements at all, they are better fitted for use as knives than as spear points, and on this account I will mention them here. So far as I can ascertain, no specimens of this sort have been found elsewhere, but they occur on both the Vermont and New York shores of the lake, though none have been found far from it. Of the dozen specimens which have been found, no two are alike in form or size, but they all resemble each other in being made of slate, usually red roofing slate, ground, not chipped, and with the stem notched on each side by a series of semicircular depressions. In some specimens the notches are small, in others large; one specimen having but two deep and wide notches on each side of the rather short stem, while another has five smaller ones. As has been said all are of slate, those not made from roofing slate are of drab talcose slate, except one which is of a compact mica slate. In some the surfaces are flat, beveled only near the edges, which are straight and sharp in all, while in others the whole surface is beveled from a median line. All are very regularly and finely formed; some are smooth, others show marks of grinding. Most are more or less ovate-triangular in outline, but one or two have nearly straight and parallel sides, except near to the point. Two of these specimens are shown full size in Fig. 7, but the figure does not fully represent the regularity of form of the original. One or two are so long and narrow that they seem wholly unfit for any use as implements, one especially, made of talcose slate, is nearly nine inches long and one and a-half inches in width at the base, the average width being much less. Such an implement would break with very little rough usage. The other specimens are smaller and stronger, but none would long remain intact if subjected to much hard treatment. Most of the specimens are from two and a-half to three inches long, some being a little less, some more than this. The width varies less, most of the specimens being very nearly an inch and a-half at the widest part. One or two specimens have been found which were precisely similar to those described except that the stem was without notches. None of the specimens show decided indications of having been used, and most are as fresh in appearance as when first made; this fact, added to the great weakness of some, and lack of strength in the material of all, leads me to conjecture that they may have been badges of office or something of the sort, rather than for any definite use.

Rimers and drills of the usual forms are found, though not in great numbers. Most of the perforations found in various specimens, as banner stones and tubes, were not made by means of flint drills, but by sticks of wood, or perhaps hollow reeds and sand, or some such process.

Spear, lance and arrow points are of course more abundant than any other class of specimens, and all the varieties figured by Col. Foster are found, with others differing from these. Some very singular inequilateral forms occur, like those figured by Prof. Haldeman in a recent number of the *NATURALIST*, and many others. Indeed a close examination of any large collection of flint points, will show that entirely symmetrical forms were rarely attained; by far the larger part are more or less unequal, both as regards curvature or straightness of the edge and convexity of the surfaces. One edge is usually more strongly curved than the other, and one surface more convex than the other. Often the blade is not in the same plane with the stem, but seems twisted upon it, due, as I think, less to the intention of the maker than to the fracture of the stone. From these slightly, often almost imperceptibly, unequal points, we have every gradation to those which are nearly as unsymmetrical as possible, and of these latter, some are so well chipped that I cannot regard them as "failures," but for some unknown reason intentionally of the form we find them. In comparing the specimens from the Champlain valley with those from Georgia, figured by Mr. Jones, I have been struck with the close resemblance between them; there are comparatively few of the objects described in "*Antiquities of the Southern Indians*," which cannot be duplicated, often exactly, in Vermont specimens. This resemblance is more noticeable because among Dr. Abbott's New Jersey specimens I find many unlike those which we have with us.

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THE ORIGIN OF THE DOMESTIC ANIMALS.

BY G. DE MORTILLET.¹

WE know that the men who lived in our region during the long quaternary, or paleolithic period, were autochthones. We have seen that they developed slowly, regularly, in a progressive, continuous manner, both from a physical as well as an

¹ Translated from *Materiaux pour l'Histoire primitive et naturelle de l'Homme*, 1879. 4e et 5e livraisons.